

# Observations from Confirmation Testing of Advanced Technologies Recommended under NCAP

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U.S. Department of Transportation  
**National Highway Traffic Safety  
Administration**



**5-Star Safety Ratings**  
*More Stars. Safer Cars.*

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# Background

- ▶ Model Year 2010 –NHTSA conducts tests of vehicles that reportedly comply with the NCAP procedure; testing validates NCAP test procedures.
- ▶ Model Year 2011 – Advanced Crash Avoidance Technologies added to NHTSA's New Car Assessment Program (NCAP)
  - Lane Departure Warning (LDW), Forward Collision Warning (FCW), Electronic Stability Control (ESC) – “recommended” to consumers with check mark on [www.safercar.gov](http://www.safercar.gov) (ESC not discussed here)
    - Recommendations requires manufacturers submitted test data showing that they pass NHTSA test procedure
    - NHTSA conducts spot check tests of vehicles for which manufacturer has submitted data, failure results in removal of recommendation

# Program Basics

- ▶ Self-verification by manufacturers
- ▶ Data submitted annually in writing to NHTSA
- ▶ Data Reviewed by NHTSA staff
- ▶ “Recommended” Icons added to SaferCar.gov

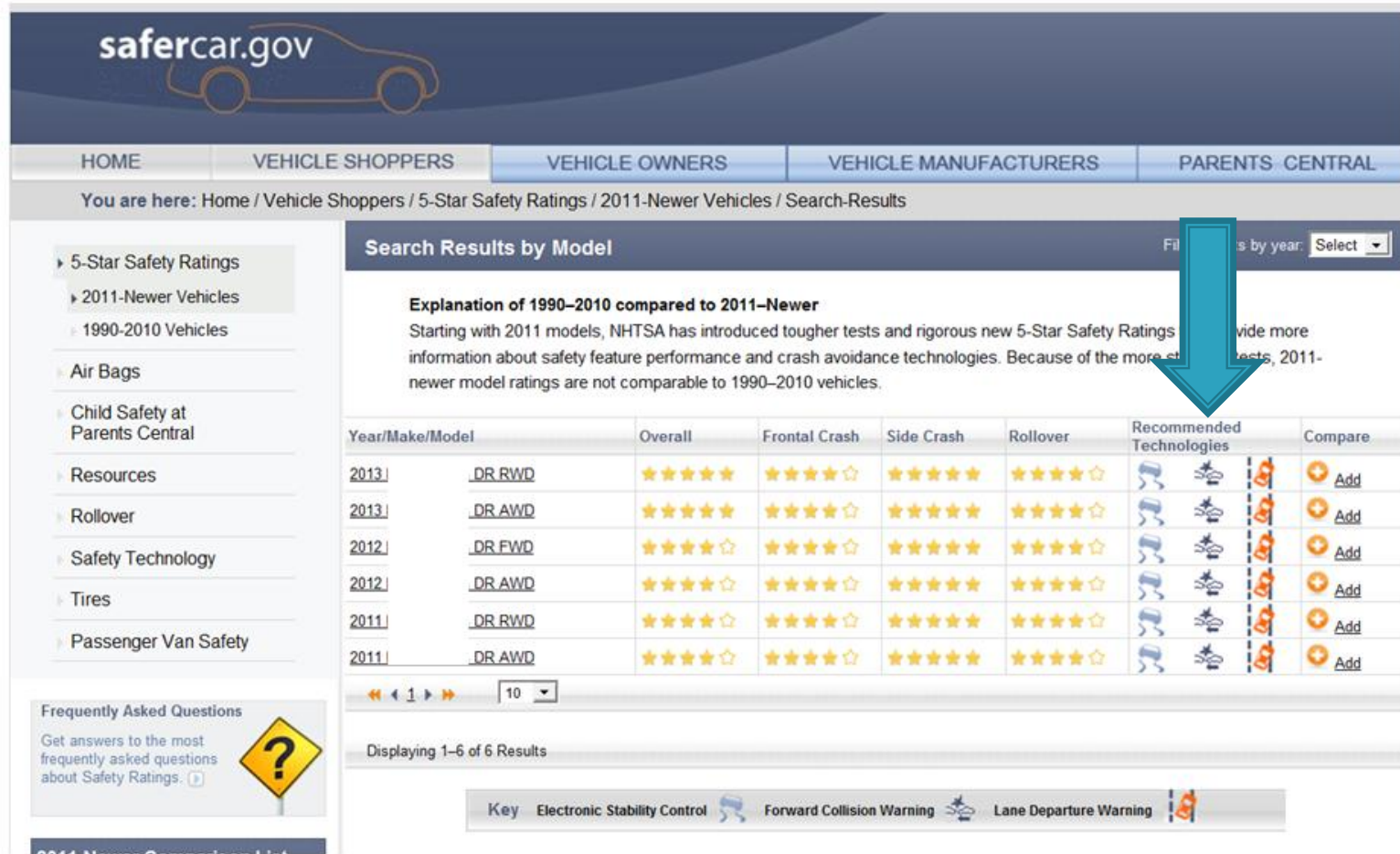


- ▶ Confirmation testing conducted by NHTSA
- ▶ Failure will result in “recommended” removed
- ▶ ESC has been on all vehicles since MY 2011

# Program Clarifications

- ▶ “2-consecutive-failures” deleted from FCW TP
  - Now: pass 5 out of seven trials, any order.
- ▶ LDW and FCW pass if ANY warning is on time.
- ▶ CAN Bus data as a warning method will be dropped in MY 2015.

# “Recommended” on SaferCar.gov



**safecar.gov**

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You are here: Home / Vehicle Shoppers / 5-Star Safety Ratings / 2011-Newer Vehicles / Search-Results

**Search Results by Model** Filter by year:

**Explanation of 1990–2010 compared to 2011–Newer**  
Starting with 2011 models, NHTSA has introduced tougher tests and rigorous new 5-Star Safety Ratings. For more information about safety feature performance and crash avoidance technologies. Because of the more rigorous tests, 2011–newer model ratings are not comparable to 1990–2010 vehicles.

Year/Make/Model	Overall	Frontal Crash	Side Crash	Rollover	Recommended Technologies	Compare
2013   <a href="#">DR RWD</a>	★★★★★	★★★★☆	★★★★★	★★★★☆		Add
2013   <a href="#">DR AWD</a>	★★★★★	★★★★☆	★★★★★	★★★★☆		Add
2012   <a href="#">DR FWD</a>	★★★★☆	★★★★☆	★★★★★	★★★★☆		Add
2012   <a href="#">DR AWD</a>	★★★★☆	★★★★☆	★★★★★	★★★★☆		Add
2011   <a href="#">DR RWD</a>	★★★★☆	★★★★☆	★★★★★	★★★★☆		Add
2011   <a href="#">DR AWD</a>	★★★★☆	★★★★☆	★★★★★	★★★★☆		Add

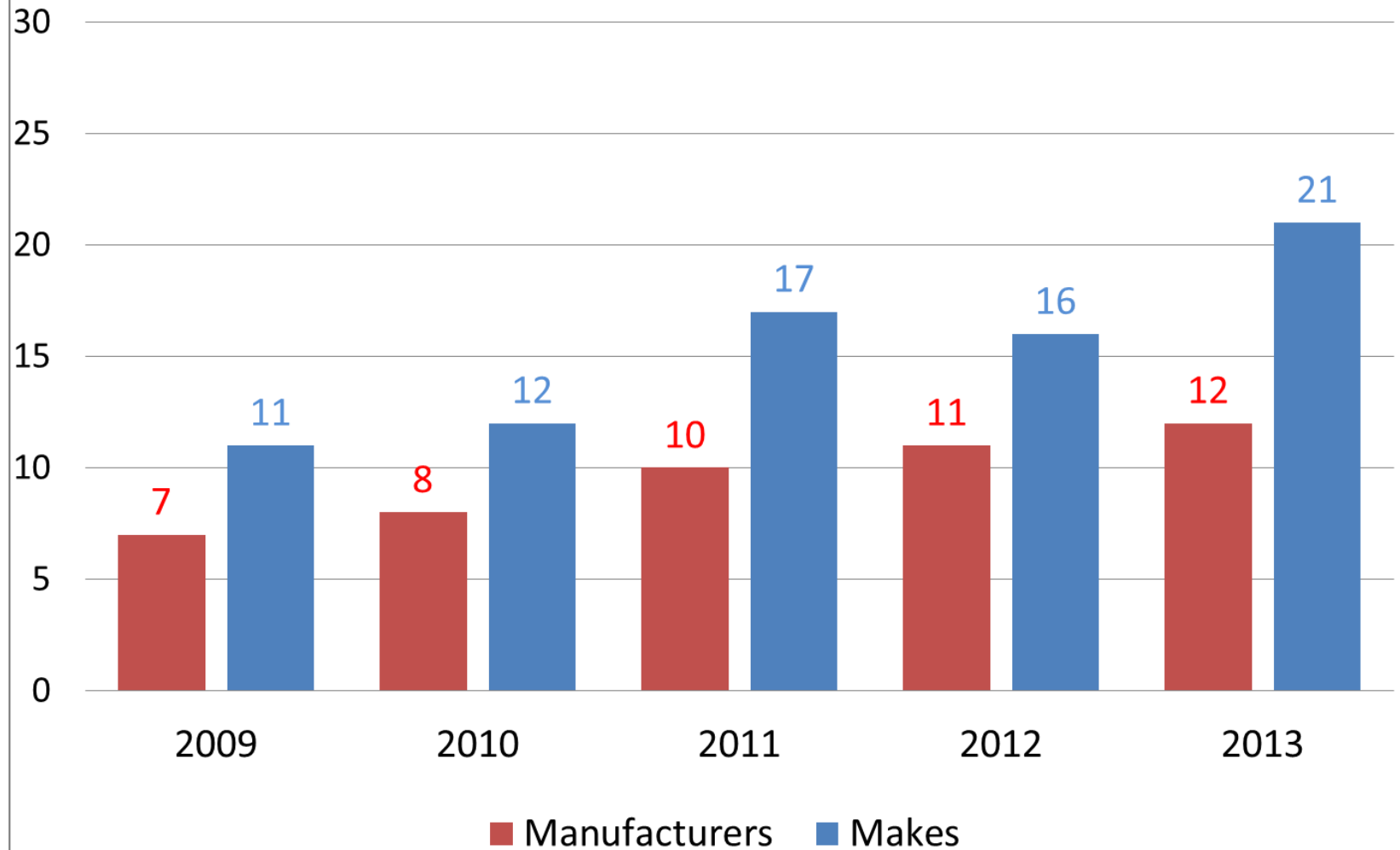
« 1 » 10

Displaying 1–6 of 6 Results

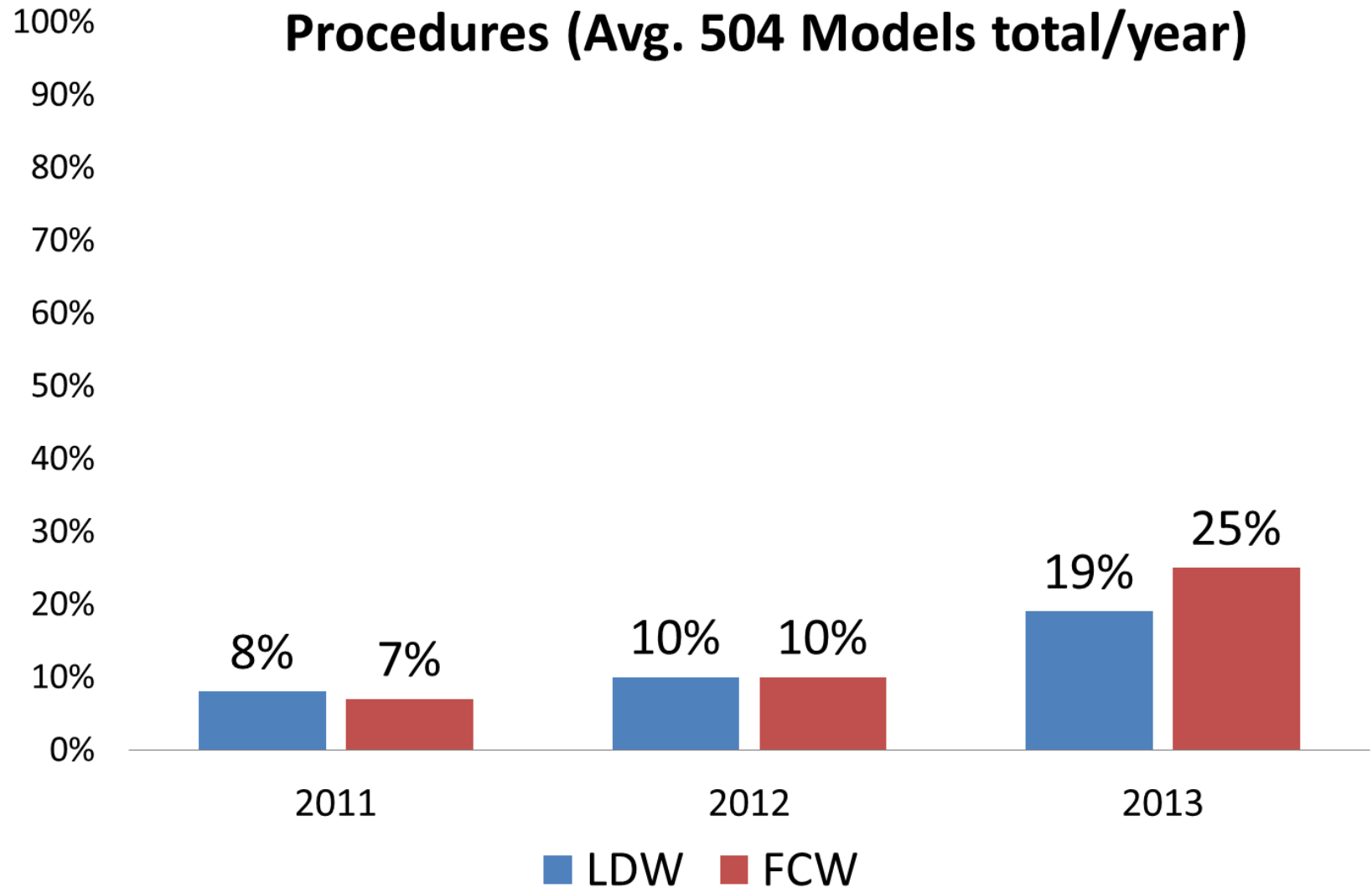
Key Electronic Stability Control Forward Collision Warning Lane Departure Warning

# Market Response

## Manufacturers and Makes Per Model Year That Report LDW, FCW or Both



## Models / Year Certified to NCAP FCW or LDW Procedures (Avg. 504 Models total/year)

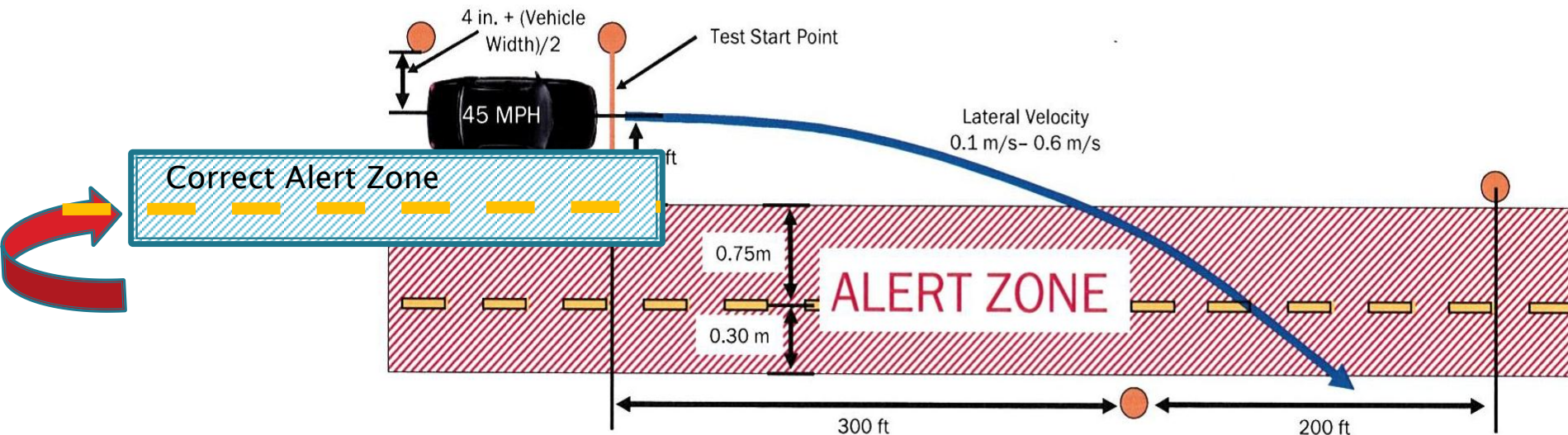




# Testing Issues

# Misinterpretation of Test Procedure by Non-NHTSA Labs

Independent Test Lab Track line layout wrong in non-NHTSA report; lane is 2 ½ feet too wide.



# Actual Warnings vs. CAN Bus Data

- ▶ The agency uses actual audio, visual or haptic signals
- ▶ Some manufacturers are using only CAN (controller area network) data
  - CAN bus codes have all been confidential
  - CAN bus codes are not readily provided by vehicle manufacturers
- ▶ CAN bus was only intended to be used if access to the actual signals was difficult
- ▶ NCAP will be deleting the use of CAN bus codes in FCW and LDW



# Vehicle-related Issues

# Initial Self-Calibration

## Forward Collision Warning Systems

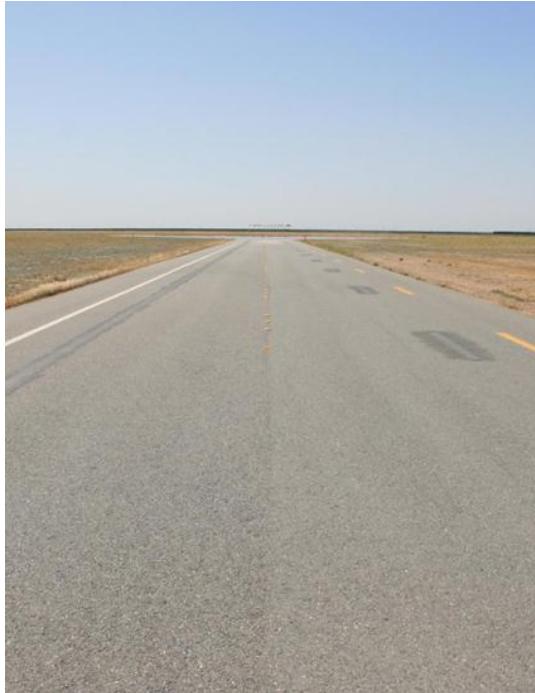
- ▶ Some vehicles not warning when delivered.
  - Self-calibration of radar unit is built into vehicle programming
  - Requires up to 100 miles of driving to calibrate before they completely pass FCW Test 1, “lead vehicle stopped”.





# Algorithm Confusion, LDW

- ▶ Track conditions confused some LDW systems.
  - Lanes too close together
  - Track surface conditions blamed for LDW failure – “construction zone”



# Bott Dots

- ▶ Some vehicle LDW systems do not recognize “Bott Dots” as a lane marker.



# FCW system that goes “blind”

- ▶ One vehicle system stopped working in between runs.
- ▶ The algorithm will stop warning if the system thinks it is “blind.”
  - Intended to respond to blocked radar (mud, snow)
  - Will reset on ignition cycle or if targets reappear.
  - During testing, pointed the car at a target while idling between tests to alleviate issue; passed test.



# Summary

- ▶ Manufacturer's participation in the Crash Avoidance NCAP program went from significantly increasing.
- ▶ Number of models that had advanced technologies went from 7% in MY2011 to 25% in MY2013.
- ▶ Algorithm designs are the source of most performance issues.
- ▶ “Problems” appear to be unique to individual manufacturers.